# OBR Targets Assessment

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# Version Control

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## Version Control

| Version | Date | Author | Checker | Reviewer | Approver | Changes |
|---|---|---|---|---|---|---|
| 1.0 | 05/11/21 | CK | OJ | AM | JB | Initial Report |
| 2.0 | 15/11/21 | OJ | AM | JB | JB | CAA Amendments |
| 3.0 | 16/11/21 | OJ | AM | JB | JB | Finalised for Fact Check |
| 4.0 | 19/11/21 | OJ | AM | JB | JB | Fact Checked, For Final Issue |

# Contents

# Project Objectives

The CAA is seeking a view from Arcadis on whether the service quality targets that HAL has proposed for its "optimal plan" need to be adjusted in view of the capex and opex allowances that the CAA has initially proposed for the H7 period, and therefore whether any adjustments are needed and the potential size of any such adjustments.

**Arcadis Scope is to consider:**

(a) HAL's targets and determine whether the argument / logic / operational reasons used by HAL to determine any degradation in targets is reasonable, could materialise and is reflective of past performance and spending levels; and

(b) Whether the improved targets HAL proposes in the "Optimal Plan" can be delivered within the allowances the CAA is minded to set

In reaching its view, the CAA expect Arcadis to take account of, among other things:

- the lower service quality targets that HAL has proposed for its "safety only" plan (particularly for security queues and asset availability), any supporting evidence that is available in relation to these, and the credibility of HAL's case for lower targets
- whether the improved targets HAL proposes can be delivered within the capex and opex allowances CAA are minded to set
- the range of passenger forecasts (medium, high and low) currently being considered by CAA, and the extent to which the CAA's current expenditure allowances might be expected to be flexed under different outturns (whether through the development to core framework or otherwise)"

For context:

HAL proposed 36 measures in total for H7. A number of these measures do not yet have targets due to the need to gather robust baseline data. Of the targets that have been set, a number are maintained at Q6 levels and a small number show improved targets (ie: higher then previously set). Under the Safety Only Plan, several targets are set at a lower level than both the Optimal Plan and current and historic performance.

# Disclaimer

This report dated November 2021 has been prepared for the Civil Aviation Authority (CAA) (the "Client") in accordance with the terms and conditions of appointment between the Client and Arcadis UK Limited ("Arcadis") for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

# Executive Summary

## Overall conclusions

Based on the information provided by HAL, considering HAL's historic performance on delivering its targets, and taking an industry level view of how assets perform and degrade over time, Arcadis considers that the targets set in the optimal plan could be delivered based on the allowances the CAA has set in its Initial Proposals. Many of HAL's proposed H7 targets are maintaining existing Q6 targets and there is little evidence that has been shared by HAL that clearly links the level of capex alone with a reduction in asset and service performance.

Arcadis has not seen clear evidence or data that can justify the levels of degradation in service that HAL has set out in the targets in its Safety Only plan. Much of the information presented does not take into account that HAL has been outperforming its current targets both before and during Q6 and since Covid-19. There was little evidence presented by HAL that showed data or evidence that linked degradations directly with capex expenditure. It is therefore difficult at this juncture, based on the evidence supplied by HAL, to accept that the levels of degradation set out by HAL could materialise based on the allowances the CAA has set in its Initial Proposals.

Arcadis understands that there is still assessment work being undertaken by HAL to support some of these degradation levels and recommends that any adjustments that the CAA may consider should be evidence based and supported by data. This evidence should be able to directly map the reduction in capex expenditure to the degradation in service performance over time to justify any adjustment. This evidence would allow the CAA to determine whether any increase in capex is deemed reasonable.

Based on the information reviewed to date, including both historic and recent performance, it is evident that there is scope for a review of the targets proposed by HAL and the potential for some areas of further stretching targets for H7. This is covered later in this report.

# Executive Summary

- Many of the targets in HAL's optimal plan are maintained from Q6 with a small number of improved targets in the areas of baggage, punctuality and the passenger experience. HAL's safety only plan sets out 17 lower targets that it considers could materialise in areas including security and assets.

- Although HAL has set out some rationale for a degradation of targets between the Safety Only and Optimal Plans, there is a lack of substantive data or modelling evidence to support these arguments.

- Data surrounding critical areas such as security, where HAL has indicated a significant potential degradation in service levels, that is required to assist in justifying the levels of degradation is not available and, in this case, detailed modelling and trials have either not yet taken place or concluded. A lack of visibility and data therefore hampers Arcadis' ability to make informed judgements not just when comparing the two business plans but also when compared against current performance metrics.

- HAL needs to share as much information as possible from areas such as the current trials but also manufacturer developments and dialogue that are helping to shape the new products to determine whether a degradation in service, if any, will take place due to the allowances the CAA has proposed. HAL's Updated Capex Plan does not have sufficient detail to allow a clear view between spend levels and degradation to determine the quantum of spend required to deliver the two plans and effect OBR targets.

- The concept of an Enhanced Service Overlay (ESO) is deemed reasonable for asset related measures to ensure the reliable delivery of services and to mitigate against low frequency, but high impact events as is evidenced in baggage system reclaim availability (arrivals), T5 TTS and lifts, escalators and travellators. HAL has presented their thinking behind why there is a requirement for the ESO but there was no detailed evidence to underpin the quantum of opex requested. It should also be noted that the CAA has made an allowance for opex overlays in their Initial Proposals published in October 2021.

- HAL did not provide a detailed breakdown of the Security Programme spend under the Safety Only Plan beyond the £420m total, so it could not be categorically determined whether the H7 targets could be met within the proposed CAA allowances. However, the funding available for security under the safety only programme is deemed more than sufficient for the procurement of the necessary equipment, factoring in both Airline and Arcadis benchmarking data, whilst also being able to contribute to the transformation and compliance spend categories as well. The proposed targets for all security measures under the Safety Only Plan are therefore not deemed reasonable or representative of the possible outcome.

# Executive Summary

- Some of the targets proposed for H7 do not offer sufficient stretch or challenge based on historic or current performance and some suggested levels of degradation do not take into consideration the existing (positive) gap between existing performance and current targets nor proposed targets in the two H7 plans. These are analysed later in this report and are accompanied by some suggested ranges that are considered more appropriate.

- Overall, it does not seem that HAL has recognised their historic or current performance levels sufficiently when setting the targets for H7 under either the Optimal Plan or the Safety Only Plan. Current performance levels are almost exclusively above existing SQRB Q6 Targets and proposed targets for both plans, notwithstanding the fact the last two years during the pandemic have not been typical. This is especially apparent when looking at measures such as Wayfinding, Cleanliness and Wi-Fi, with performance levels generally increasing over time. This performance has been measured on an annual basis from QSM data.

# Approach

# Our approach

- Reviewed Chapter 9.2 Revised Business Plan , 5.3 (capex), 5.4 (opex) and 6.2 (measures, targets and incentives) in Updated Business Plan. This material can be found in the following link.
- Reviewed HAL's targets and supporting rationale in the business plan
- Reviewed relevant extracts from Cepa Taylor Airey (CTA) report regarding relevant opex overlays supplied by the CAA
- Considered HAL's service quality performance in Q6/2019 and the capex/opex HAL spent on service quality in Q6.
- Engaged with HAL to understand methodology, thinking and logic used to determine the difference in targets between 'Optimal' and 'Safety Only' Plans – focussed on the degradation elements.
- Arcadis has undertaken several dissemination sessions with HAL and have been provided with some supporting information as follow-up to these sessions for review.
- To determine how the different forecasts used (High/Medium/Low) feature in how HAL has set its targets:
- We engaged with the airline community to seek their views on HAL's proposed targets including the degradation targets HAL has developed in its "Safety Only Plan" for H7
- We considered the allowances the CAA has set for Initial Proposals and what impact that may have on the targets that HAL has set.
- Recognises the opex overlays that the CAA has put forward in its Initial Proposals which are subject to further consultation as part of the H7 price control decision.

# Evaluation

Arcadis has reviewed the documentation and has engaged with HAL in 5 workshop sessions for them to present their rationale regarding the potential degradation in service from the Optimal Plan to the Safety Only Plan. Arcadis has considered this rationale and where HAL has supplied some further information, we have compiled an opinion on whether HAL's position is well reasoned and supported by evidence. Arcadis has also engaged with the airline community to understand their views on HAL's proposed safety only plan targets. Arcadis has analysed HALs QSM data on an annual score basis against target, rather than on a monthly basis, and this is shown in the charts against each measure within the report. It is acknowledged that on some measures, in year monthly performance has dropped below target.

Arcadis has undertaken a detailed assessment of a number of the targets set out in HAL's business plan. The following slides set out the relevant measure and associated target, HAL's evidence and our conclusions based on this information, noting the airlines views. Where no detailed evidence was presented by HAL, we have not been able to assess whether the degradations outlined by HAL could materialise.

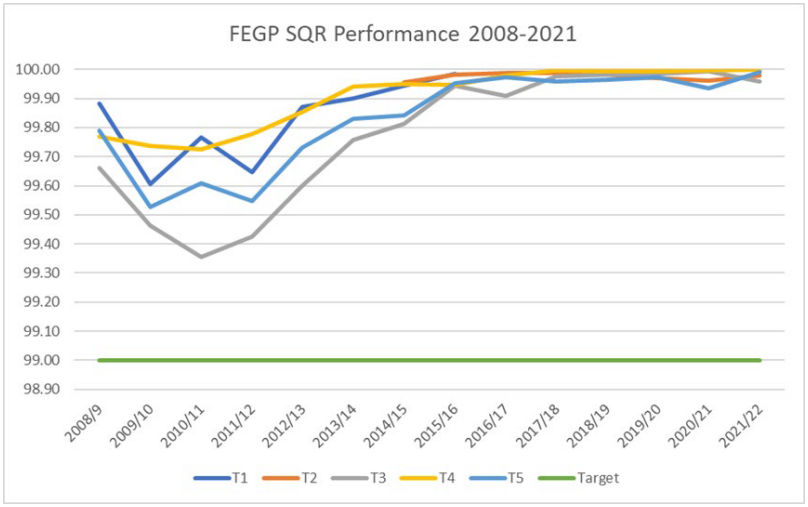
- Stand Facilities
- Wayfinding
- Security including Control Posts
- Cleanliness
- Lifts, Escalators and Travelators/ Passenger Sensitive Equipment (PSE)
- Terminal Track Transit System (TTS)
- Baggage System Reclaim availability (arrivals)
- Wi-Fi performance
- PRM/PRS satisfaction
- Departure flight punctuality
- Pier-served stand usage
- Overall satisfaction

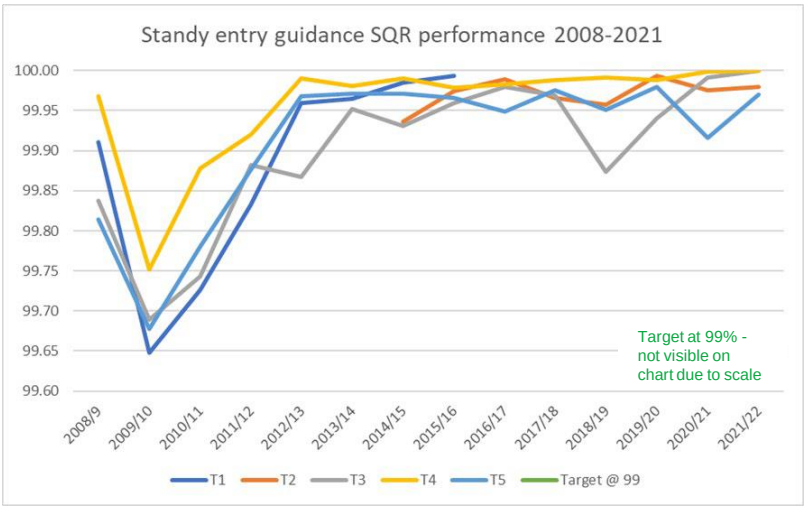
# OBR Target Assessment | Stand Facilities

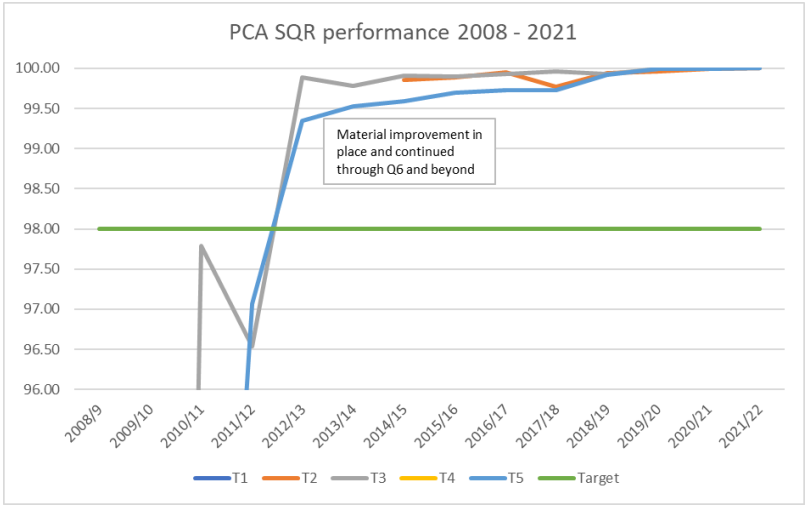
| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable and Reliable | **Stand Availability** | 99% | 98% |
| | **Provision of Stand Facilities** | 99% | 97.25% |
| | Availability of Stand Entry Guidance System (SEGS) | 99% | 98% |
| | Pre-Conditioned Air (PCA) | 98% | 95% / 97% - subject to sustainability investment profile |
| | Fixed Electrical Ground Power (FEGP) | 99% | 98% |
| | Air Passenger Boarding Bridges (APBB) Availability (Jetties) | 99% | 98% |

- The optimal plan includes the Enhanced Service Overlay that HAL says it needs to protect service levels for H7 and minimise the impact on H8.
- Stand availability – the Optimal Plan target is 99% compared to the Safety Only Plan of 98%.
- Provision of stand facilities combines and measures the average availability of four SQRB measures – SEGS, PCA, FEGP and APBB (Jetties).The overall target is 99% (Optimal Plan) and 97.25% (Safety Only Plan).
- The Safety Only Plan contains £1.5bn of prioritised capital spend on asset management but no increased Opex allowance for increased inspection and maintenance compared to Q6.
- The Optimal Plan provides £1.5bn of capital spend and additional capital for the renewal of PCA under the carbon and sustainability programme, as well as the increased Opex allowance for Enhanced Service Overlay (ESO) to allow for an increase in the inspection and maintenance regime.
- Because the Safety Only Plan does not include the ESO , HAL has set lower targets. HAL says this is because of the expectation that assets may be out of service more frequently due to increasing age and the inability to increase the frequency of inspection and maintenance services.

# OBR Target Assessment | Stand Facilities




- It is clear that based on historical performance data, HAL has generally been outperforming their targets between 2008-2021.
- FEGP and SEGS SQRB performance has been above 99%. Except for T3 and T5 performance in 2010-2012, the SQRB performance for PCA has been above its target of 98% though we note that airlines consider that, notwithstanding the high availability scores, the current PCA product is suboptimal.
- As the target is already at 99% there is little scope for stretch on these measures.

Source: HAL data, Arcadis analysis

# OBR Target Assessment | Stand Facilities

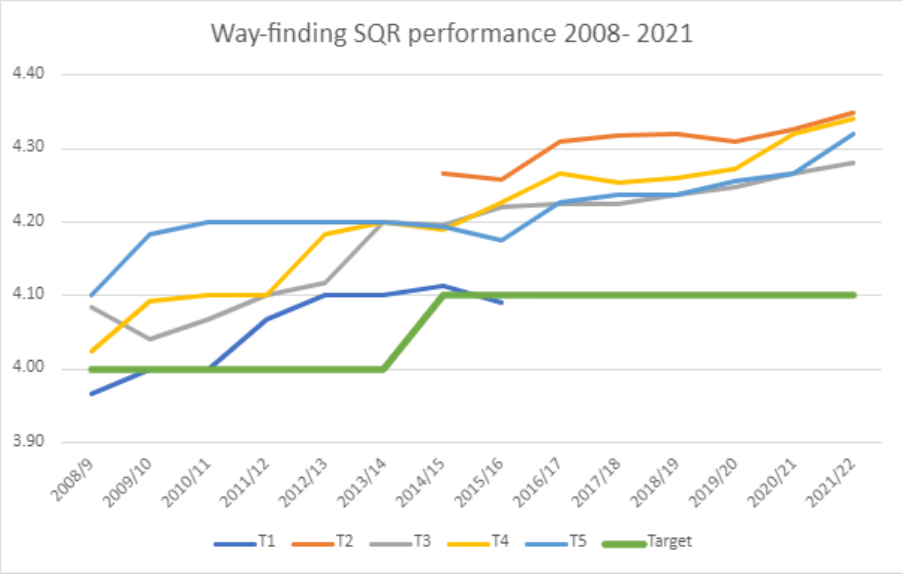
| Evidence Appraisal | Conclusion |
|---|---|
| HAL says most assets were close to mid-life at the start of Q6. It is anticipated that all 4 asset groups will be at end of life by 2026 (end of H7). The rationale for an increase in the inspection and maintenance regime via the Enhanced Service Overlay is deemed reasonable by HAL on the premise of:<br>• The continuing increase in the average age of critical SQRB asset life which presents an increase risk of simultaneous failure during H7<br>• The current regime has limited availability to allow for dead banding of assets such as APBB (jetties) – these have never received “major” maintenance interventions during their operational life<br>• Increased safety driven alleviations and passenger driven service | Having engaged with HAL to understand the rationale behind this, it would be reasonable to conclude that HAL would need some additional opex (Enhanced Service Overlay) to provide resilience for its older stand assets.<br><br>HAL argue that by not having the Enhanced Service Overlay, there would be compounded reductions in service levels that continue through to H8. This would explain the degradation between the Optimal and Safety Only plans if it is anticipated that assets would be out of service at a greater frequency due to them becoming unserviceable and requiring intervention. However the enhanced opex allowance should provide the necessary means to achieve the optimal plan targets. |
| According to HAL, the majority of APBB (jetties) and PCA units will exceed the end of asset life by middle of H7. The rationale behind this is that the risk of major maintenance intervention increases requiring more inspection and servicing. Targeted maintenance extends the asset life. | Whilst there is logic behind this, we would highlight that the assets should not just be assessed in years but also the mode and frequency of operation for each individual unit. HAL is also aware of this and appears to be prioritising its highest risk assets for replacement. |
| HAL says assets such as the SEGS and FEGP will require maintenance throughout H7. The SEGS is deemed medium risk with upgrades through H7 not within the optimal plan. For FEGP, the asset replacement programme only includes funding to start replacement of T5 units only. For PCA, the asset replacement plan includes limited investment to address life expired and unsupported units in T5, as well as those stands which have the highest utilisation. | Through our sessions with HAL, we understand that their strategy is a ”Safety Plan Plus” approach in asset management. This implies that there is a requirement for opex to facilitate the maintenance regime.<br><br>The Safety Only Plan would address those stand assets which are at highest risk of failure and need replacement. However, there is the risk that those assets classified as a lower priority could require more maintenance intervention based on continued usage and / or increasing age, which the Safety Only Plan does not cover. |

# OBR Target Assessment | Stand Facilities

| Evidence Appraisal | Conclusion |
|---|---|
| Without adequate expenditure, HAL says it will not be able to provide the same levels of asset availability. With assets increasing in age, HAL argues that the greater volume of renewals and maintenance required will lead to more time where an asset is out of operation in order to facilitate replacement or repair interventions. | There is less resilience in H7 against assets becoming unserviceable and having to be closed for repair / replacement without some form of additional operating expenditure. With increased risk of assets failing simultaneously, we can see why there are degradations between the Optimal and Safety Only Plan targets. These degradations should be mitigated by the enhanced opex allowance.<br><br>However, we are not clear on the extent of the degradation. The general rationale is that stand assets are increasing in age, requiring increased frequencies of maintenance and inspection. From our engagement with HAL, they have stated that assets such as APBBs (jetties), which are relatively new or in good condition will need limited interventions. Those in the poorest condition will require full replacement whilst an optimal decision will be needed for those assets at mid-life.<br><br>It is not clear, based on this information, what this means for the extent of the degradation and whether the targets set by HAL reflect the different conditions of all of the stand assets. It is advisable that HAL provides more data or information to explain the rationale behind the difference in targets for the Optimal and Safety Only Plans. |

# OBR Target Assessment | Wayfinding

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable and Reliable | Wayfinding | 4.15 | 4.10 |




Source: HAL data, Arcadis analysis

- The chart to the left shows the SQRB performance for Wayfinding since 2008. Bar two years on T1, HAL has exceeded the target every year across all other terminals accommodating a target rise from 4.0 to 4.1 in 2014/15.
- HAL says passenger perception of wayfinding is linked to their experiences of wayfinding outside of airports, which in turn shapes their expectations of what will be available at the airport.
- HAL says this is confirmed by its passenger priority research, which shows an increasing desire, especially among non-UK residents (54% of 2019 passengers), to get wayfinding support through their personal electronic devices.
- The Optimal Capital plan includes programmes ("Efficient Airport" and "Future Ready - Service, Resilience") to make investments in digital wayfinding to keep pace with consumer expectations and deliver HAL's 2019 improvements on Q6 perception of wayfinding.
- The Safety Only plan does not allow for these investments and therefore HAL anticipates some deterioration in wayfinding satisfaction as they fail to keep up with consumer expectations. While HAL argues that consumers' expectations are rising, we note that this is not reflected in lower QSM scores/levels of satisfaction, which instead are trending upward.
- We also note that the Safety Only Plan target is consistent with the current Q6 target at 4.10 which HAL has consistently outperformed.

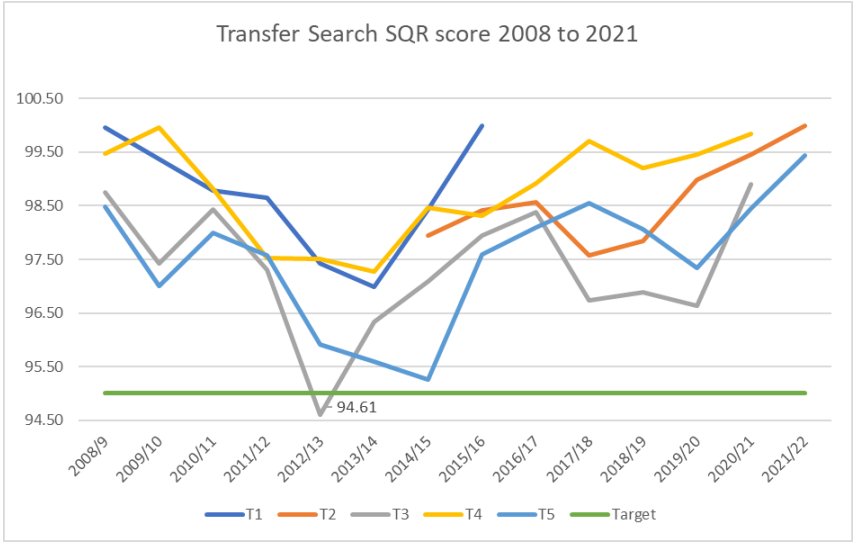
# OBR Target Assessment | Wayfinding

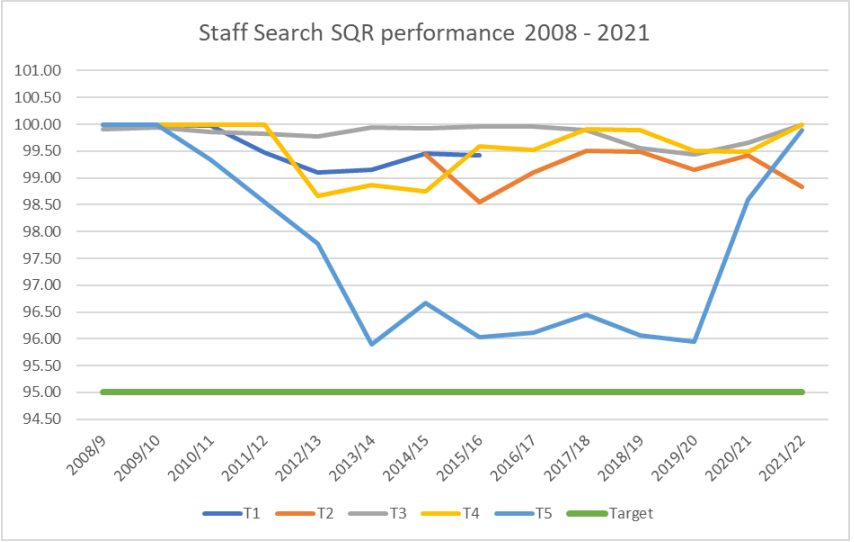
| Evidence Appraisal | Conclusion |
|---|---|
| • HAL says the Safety Only plan does not allow for these investments and therefore HAL anticipates some deterioration in wayfinding satisfaction as they fail to keep up with consumer expectations. | HAL has performed above target (except T1) every year since 2008. It would appear in setting the targets for both the Optimal Plan and the Safety Only Plan that HAL has not considered their current performance sufficiently. In the last 5 years from the chart on the previous slide, the Wayfinding QSM score has not dipped below 4.20* suggesting a long-term trajectory of improved performance. In arriving at its H7 targets, HAL has taken the lowest performing month by terminal from the period 2012-2018 and the lowest month by terminal in 2019.HAL then used the higher of those two figures (4.22 T5 September 2019) and apportioned a margin of error to arrive at 4.15 under the Optimal Plan. The average based on HAL's data for Q6 was 4.24.<br><br>At 4.24 for Q6, this is already higher by 0.09 than the target HAL proposes for H7 in the Optimal Plan and 0.14 higher than is proposed under the Safety Only Plan. HAL have not yet provided sufficient rationale for the degradation from existing or historic levels of service to those proposed under either H7 plan.<br><br>Whilst the lack of investment in the Safety Only Plan for digital wayfinding could logically explain the 0.05 differential to the Optimal Plan, neither target appears reflective of current performance and the Safety Only Plan simply maintains the same historic SQRB target that HAL has consistently outperformed against on an upwards trajectory and on that basis does not seem reasonable. Consequently, this is an area that could justify a stretch review on the proposed targets for H7 which is discussed further on in slide 42.<br><br>* Note – it is noted that HAL's performance on Wayfinding has generated bonus payments since 2016 as follows (information from published regulatory accounts, see following link):<br><br>• 2016 - £353k<br>• 2017 - £520k<br>• 2018 - £684k<br>• 2019 - £1,045k<br>• 2020 - £144k |

# OBR Target Assessment | Transfer & Staff Search

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable & Reliable | % Queue times < 10 mins | 95% | 46%-89% |

- As can be seen from the charts to the right, SQRB performance for <10-minute queue times for both transfer and staff search have been consistently above target since 2015, notwithstanding T3 and T5 being closer to target on occasion.
- HAL says the material difference between the Optimal Plan and the Safety Only Plan target as shown above is down to the much later delivery of compliant lanes under the Safety Only Plan. The wide range target proposed by HAL under the Safety Only Plan is due to a lack of robust data to propose a more accurate and narrow target range. Trials are yet to conclude (due to conclude June 2022) on the new technology being deployed and modelling into the new configurations has yet to commence.
- In consultation with HAL, there appears to be no substantive evidence or modelling behind the wide OBR percentage ranges proposed by HAL under the Safety Only Plan, potentially explaining why such a broad range has been applied.



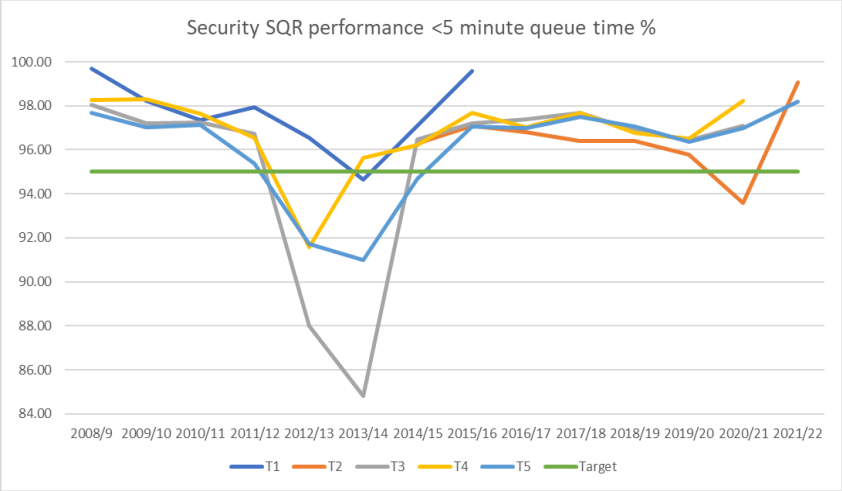



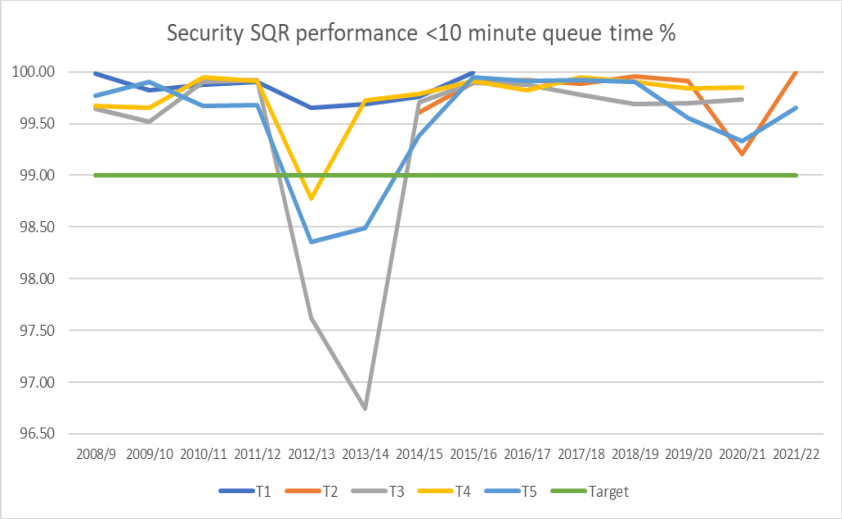

Source: HAL data, Arcadis analysis

# OBR Target Assessment | Security & Control Posts

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable & Reliable | % Central search queue times < 5 mins | 95% | 33%-75% |
| | % Central search queue times < 10 mins | 99% | 46%-89% |
| | % Vehicle queue times <15 mins | 95% | 46%-89% |

- The two charts to the right show the SQRB annual average performance for <5 and <10-minute security queue times across all terminals has been consistently above target since 2015, except for T2 in 2020/21. The dip in performance around 2012/13 was in part due to the introduction of the liquids rules and enhanced protocols which took time to normalise, with T3 showing the most notable reduction against both time metrics. Prior to this dip, performance had again been above target since 2008. Control post performance during Q6 has generally been strong, with July 2021 data showing all control post group scores exceeded 99%, some 4%pts above vehicle queue time target. The material differences between the Optimal Plan and the Safety Only Plan targets as shown above are down to the much later delivery of the compliant lanes under the Safety Only Plan. The wide range targets proposed by HAL under the Safety Only Plan are due to a lack of robust data to propose a more accurate and narrow target range. Trials are yet to conclude (due to conclude June 2022) on the new technology being deployed and modelling into the new configurations.
- During consultation with HAL, there appears to be no substantive evidence or modelling behind the wide SQRB percentage ranges proposed by HAL under the Safety Only plan, potentially explaining why such a broad range has been applied. This applies to all 3 measures as shown in the table above.




Source: HAL data, Arcadis analysis

# OBR Target Assessment | Security & Control Posts

| Evidence Appraisal | Conclusion |
|---|---|
| The Safety Only Plan alone (£420m) does not allow for all scanners to be replaced or for the delivery of adequate lanes for HAL's forecast passenger numbers. HAL says this will lead to longer queue times as passengers have to use a smaller number of compliant lanes. | • Benchmark information suggests installing and commissioning a lane would cost c£1.5m (new x-rays and scanners, but no discounts for scale of project applied). £2m per lane would be considered a maximum.<br>• At £1.5m per lane, this would equate to c£245m for 163 lanes (which would cover the entire campus, including passenger terminals, staff, transfer and control post security areas), leaving c£175m to be allocated for compliance/transformation. The additional funding under the Optimal Plan is described as £230m – Security Compliance to ensure all lanes are compliant prior to the end of H7 and £130m for Security Transformation to improve service levels and operating costs.<br>• It is therefore deemed reasonable to conclude that HAL could afford to procure all the lanes it requires and make a material contribution towards the security compliance/transformation programme from the Safety Only Plan allocation of £420m.<br>• A detailed breakdown of these costs has not been provided despite being requested and HAL should be encouraged to share this information as soon as possible to give greater clarity. |
| HAL says there is a risk of cabin baggage flow rates improving by 23 seconds on average putting them out of sync with the associated passenger and the risk of the x-rays having to be stopped to alleviate baggage backing up into the x-ray from the rear roller beds. | • Part of the challenge appears to be around the ability to design the new lanes into the optimal configuration to allow for possibly longer rear roller beds and optimised flow rate. Having requested any modelling or data to provide evidence on this point, HAL stated that the modelling is currently taking place as part of the ongoing trials (due to conclude in June 2022).<br>• It is therefore an area that needs further analysis in order to determine the actual impact of the new lanes in the existing space and what any options would look like. HAL should substantiate this risk. Without any substantive evidence to support this view from HAL it is difficult to draw any conclusions from the evidence presented. |

# OBR Target Assessment | Security & Control Posts

| Evidence Appraisal | Conclusion |
|---|---|
| HAL says the new scanner technology in the security lanes will create an incremental delay per passenger as the scanners are slower than the existing archway system. This will cause a degradation in the queue flow rates. | • Whilst some modelling has been presented to suggest a degradation of 2.6 seconds per clear passenger who does not set off any alarm, this is an average.<br>• The data made available for queue time degradation appears to ignore any possible benefits from the new technology that could reduce queue times. For example, not having to remove liquids and electronics at divestment stage, with an assumed resultant reduction in trays per passenger, which could offset the delay at the scanner as well as further potential efficiencies as passengers become more familiar with the process over time.<br>• Robust trial data is required to provide substantive evidence to the real impact of the new lanes technology and configuration impact.<br>• In addition, with the lower passenger volumes anticipated in the early part of H7, this should allow HAL to meet its targets before passenger volumes are forecast to reach pre-pandemic levels again later in H7.<br>• Whilst every passenger will have to go through a scanner which is recognised as slowing down flow rates when compared to a standard archway, there will be one scanner per lane rather than the current one scanner to two lanes which in itself would suggest an immediate efficiency. HAL state this would only be possible as part of the regulatory and transformation programmes.<br>• HAL is understood to also be proposing new passenger queue measurement technology to better manage the security process enabling a more dynamic and proactive scheduling of resource to meet demand. This again needs to be reflected in the targets and more information shared as to the likely benefits this will bring. |

# OBR Target Assessment | Security & Control Posts

| Evidence Appraisal | Conclusion |
|---|---|
| Under the Safety Only Plan – HAL says only 18% of passenger lanes will be compliant by December 2024 compared to 88% under the Optimal Plan.<br><br>Both plans would mean that a number of lanes will be non-compliant against the 1st June 2024 deadline, resulting in reduced operational capacity, leading to longer average queue times.<br><br>HAL conclude that service levels under the safety only plan will be poor and continue in their discussions with the DfT and the CAA to ascertain what the consequences for non-compliance by 1st June 2024 would be.<br><br>Only by the end of H7 are all lanes forecast to be compliant which is deemed best case scenario by HAL owing to a 1.5 year lead time on the programme. Again, HAL state that this would only be possible through both the regulatory and transformation programmes. | • The wide range target proposed by HAL under the Safety Only plan is due to the lack of robust data and it appears that there is no substantive data or modelling behind this range. Even under the Optimal Plan, HAL says it will not meet its regulatory deadline for compliant lanes, putting pressure on their service in the latter part of H7 if they are to hit the targets they suggest under this plan. HAL will be assisted potentially by the lower forecast passenger volumes in the earlier years of H7 as they build back up to pre pandemic levels.<br><br>• The impact of a 1.5 year programme lead time to install the lanes could contribute to a degradation in service levels as HAL is not forecasting to operate any non-compliant lanes beyond the 1st June 2024 deadline. HAL will only have c18% terminal passenger lanes available under the Safety Only Plan at December 2024 and circa 50% by December 2026. If non-compliant lanes are not operated then this could lead to a material drop in performance without all lanes being available to process passengers. On the basis that HAL could afford the required lanes and some transformation/compliance work from its £420m Safety Only plan as concluded previously, it would be reasonable to also conclude that the gap between the 18% and 88% as at December 2024 for programme completion would also narrow and possibly even close.<br><br>• There is insufficient evidence to determine if either plans timelines are realistic as there is no trial data to back up the data received. The trials currently underway are due to conclude in June 2022. More data and evidence from HAL should be provided as soon as possible from the current trials but the disparity in the percentage programme completion between the two plans is not supported based on the information reviewed.<br><br>• Given the above, we review the options for further stretch measures on slide 43. |

# OBR Target Assessment | Dep. Flight punctuality

| Consumer Outcome | Measure | 2019 performance | Optimal Plan | Safety Only Plan |
|---|---|---|---|---|
| Predictable & reliable | Departures flight punctuality | 78.4% | 80.5% | 78.4% |

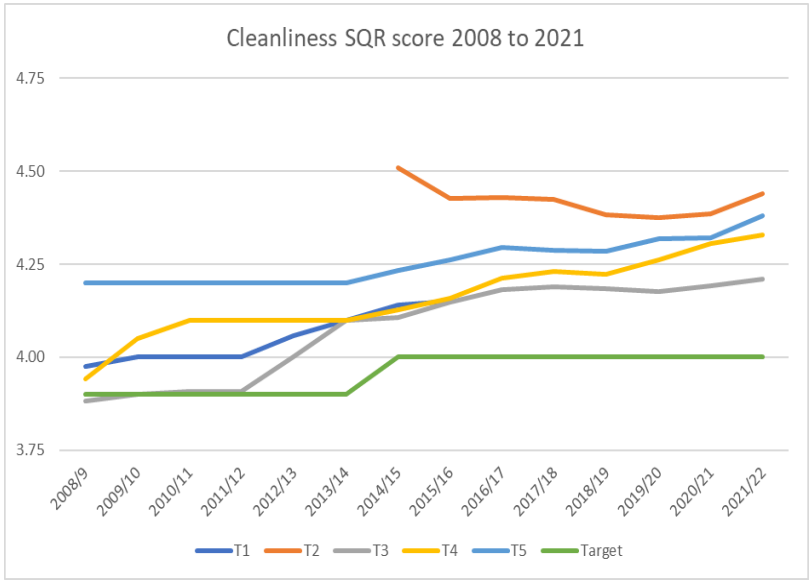
- HAL states that consumer insights confirm that punctuality is a key area where passengers value improvements. In 2019 alone, 78.4% of flights departed on time, which was a rise of 59% compared with 2007. On-time departure is a function of a number of areas, and it is recognised that not all of these areas are within HAL's control or linked to the allowances the CAA sets.
- As mentioned, it is recognised that many elements of the passenger journey fall outside HAL's direct control. However, it would appear based on the evidence seen to date that a significant contributing factor for the proposed degradation between the Safety Only and Optimal Plan targets could be the knock on impact the degradation in security performance under the Safety Only Plan at 44%-89% (longer security queues) would have on departures flight punctuality.
- As the relevant security target degradation is in itself not deemed reasonable based on evidence provided to Arcadis, so it is logical to conclude that the knock on impact from security on departures flight punctuality is also to be challenged in more detail as the security trial data and configuration modelling become available.

- Historic SQRB performance data is not available for departures flight punctuality as this is a proposed reputational OBR measure. However, the Safety Only Plan target is aligned with HALs 2019 performance (78.4%)
- Arcadis has also received performance data from the CAA showing latest operational performance covering the period August 2019 to August 2021.
- Prior to the pandemic in March 2020, HAL appears to have been operating at a Moving Annual Average (MAA) of c78% in February 2020 on departures punctuality, only exceeding the target in month in November 2019. From March 2020, performance exceeds the target month on month until the cumulative effect of the in-month improvements start to come through in the MAA reporting with June 2020 as the first month whereby the MAA reaches the target set. From July 2020 to August 2021, HAL's departure MAA flight punctuality is consistently above target despite an in-month reduction in score achieved in December 2020 to around c72%.
- It would be reasonable to deduce that the impact of the pandemic and the resultant lower passenger numbers from reduced aircraft traffic movements (ATMs) has contributed to the improvement in this metric. As ATMs start to increase again, it is reasonable to anticipate that the MAA will decline. This potential decline in punctuality could be a function of a number of areas, not all of which are within HAL's control or linked to the allowances the CAA sets.
- Given the lack of historic data, it is difficult to form any robust conclusions but the Safety Only plan target (2019 performance) appears in line with historic performance but does not take into account the ESO that the CAA has allowed for in its Initial Proposals that should mitigate many of the challenges around stand facilities that could reasonably impact on punctuality. As such the Optimal Plan target should be considered and this is further analysed on slide 45.

Source: HAL/CAA data, Arcadis analysis

# OBR Target Assessment | Cleanliness

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Comfortable and secure | Cleanliness | 4.05 | 4.00 |



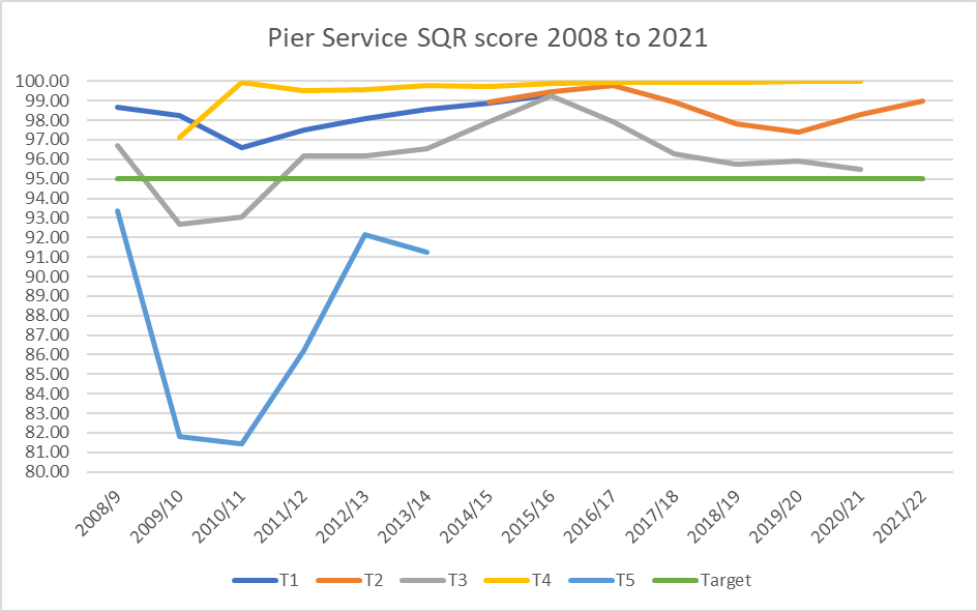

Source: HAL data, Arcadis analysis

- HAL has stated that consumers have heightened needs in the area of cleanliness as a result of the Covid-19 pandemic. This is understood and the CAA have included an allowance for this in their Initial Proposals for H7 specifically for Covid-19 related additional cleaning.
- The chart on the left, clearly shows that HAL has performed above the SQRB target every year since 2008/9 with a brief exception in T3 in 2008/9, indicating a long term upward trajectory of improved performance.
- It is therefore reasonable to deduce that HAL would appear to have not sufficiently taken into consideration, its historic strong performance when setting its targets for H7 in either plan.
- Since the SQRB target rose to 4.00 in 2014/15, the lowest score achieved was T3 in 2014/15 at 4.11. A broad average since 2014/15 across all terminals is 4.25, suggesting the targets HAL proposes in both plans are rather conservative and not reflective of past performance.
- Given HAL's strong performance in this area and the CAA's proposed allowance for the Covid-19 overlay, this is another area that would warrant further stretch on the proposed targets for H7.

# OBR Target Assessment | Pier served stand usage

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable & reliable | Pier served stand usage | 95.00% | 94.00% |

- HAL states that, with a reduction in stand facilities available due to reduced resilience levels in the Safety Only Plan there will be a direct knock on impact on stand availability and therefore pier service.
- In the Optimal Plan, HAL states this risk would be reduced or even mitigated because of the availability of the additional operating expenditure for stand facilities and that further improvements could also be realised due to the planned capital expenditure in areas such as airfield automation and specifically, the delivery of Smart Stand.
- As none of these investments are present in the Safety Only Plan, HAL have reduced the proposed target.
- Historic and current performance for this measure has been generally strong as can be seen in the chart above right.




Source: HAL data, Arcadis analysis

- As T5 has no Q6 target for pier served stands there is data missing. Terminals 2 and 4 have been performing above target since 2011-2012, albeit T3 has been closer to target, especially in the period 2017-2019.
- HAL has understandably operated from a rationalised terminal operation since the impact and subsequent response to the pandemic. Given the lower ATMs and passenger numbers, recent performance data is unlikely to be fully reflective of long term performance and issues across individual terminals.

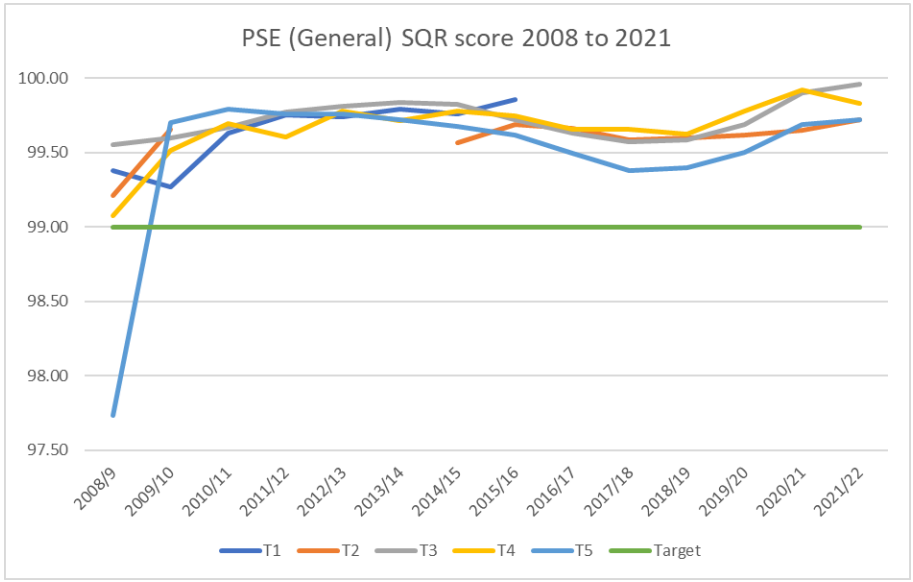
# OBR Target Assessment | Pier served stand usage

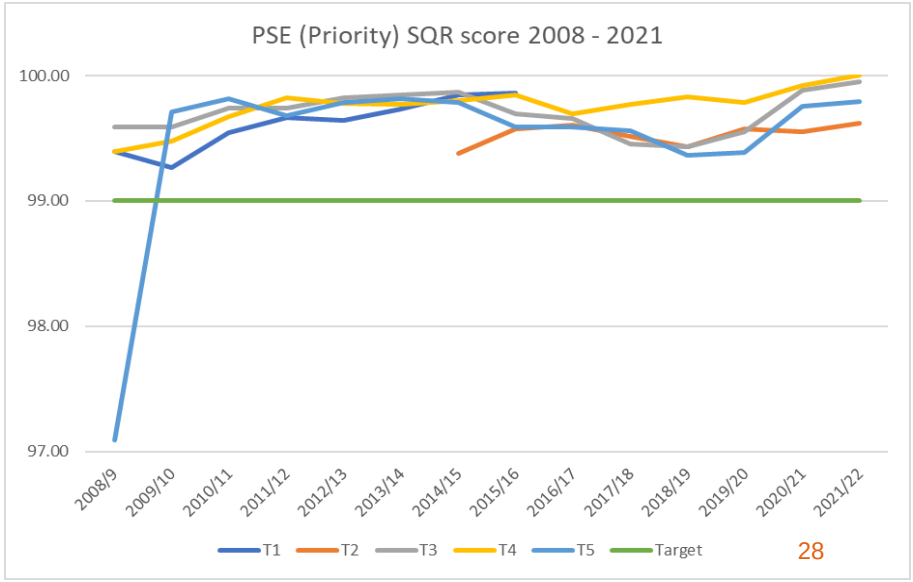
- As the CAA has proposed in its H7 Initial Proposals in October to allow an ESO, and the ESO is considered a reasonable concept in its principle, so this would logically flow through into pier-served stand usage which would assist in mitigating any proposed 1%pt degradation in the 94% proposed by HAL under the Safety Only Plan v the Optimal Plan and current SQRB target of 95%.
- This is supported by HAL's own view that the ESO under the Optimal Plan would mitigate the risk of pier service having a consequential impact if the additional opex is not allowed. Whilst the CAA have made an allowance for the ESO as part of its Initial Proposals, this is subject to further consultation as part of the H7 price control decision.
- It would be reasonable to deduce that the impact of the pandemic and the resultant lower passenger numbers from reduced aircraft traffic movements (ATMs) will have eased pressure on the 95% target being achieved.
- In conclusion HAL's strong performance on this measure and the inclusion of an ESO suggests HAL should be able to meet the optimal plan target, thus mitigating the risk of the degradation materialising.
- There is scope here to consider a stretch target.

# OBR Target Assessment | Lifts, Escalators & Travellators

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable & reliable | Lifts, Escalators and Travellators | 99% | 97% |

- The charts to the right, clearly show that HAL has exceeded its SQRB target of 99% every year since 2008 with only T5 falling below target in 2008/9 on both General & Priority PSE, which coincides with the opening of the terminal. The working session with HAL provided some insight into the general age of the assets with c340 assets being aged between 5-10 years, c410 being aged between 10-15 years and c180 being aged around 15-20 years. Either side of these ranges were smaller samples. HAL currently operates >550 lifts and >350 escalators.
- HAL says the degradation in service level between the two plans of 2%pts is due to the increased risk of failures and resultant downtime owing to the Safety Only Plan not having the Enhanced Service Overlay (ESO) to enable more inspections and maintenance. The ESO would enable a more proactive maintenance approach to the assets given the age profile that HAL is operating.
- The lack of ESO under the Safety Only Plan is deemed a reasonable explanation for the degradation in SQRB target from the optimal plan to the safety only plan but does not sufficiently account for the historic strong performance on this category against previous SQRB targets in setting the targets for H7. The concept of the ESO is however regarded as reasonable and furthermore, it should be noted that the CAA has made an allowance for the ESO in its Initial Proposals in October 2021.




Source: HAL data, Arcadis analysis

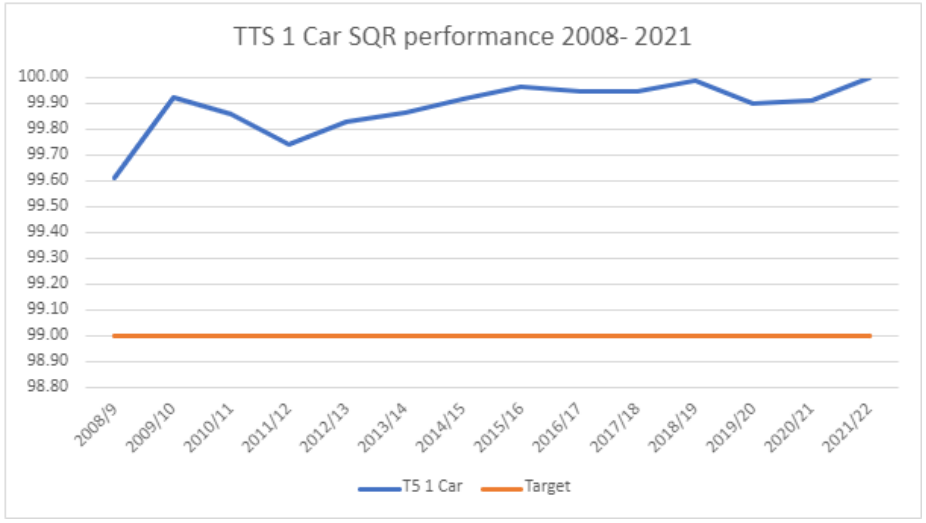
# OBR Target Assessment | Lifts, Escalators & Travellators

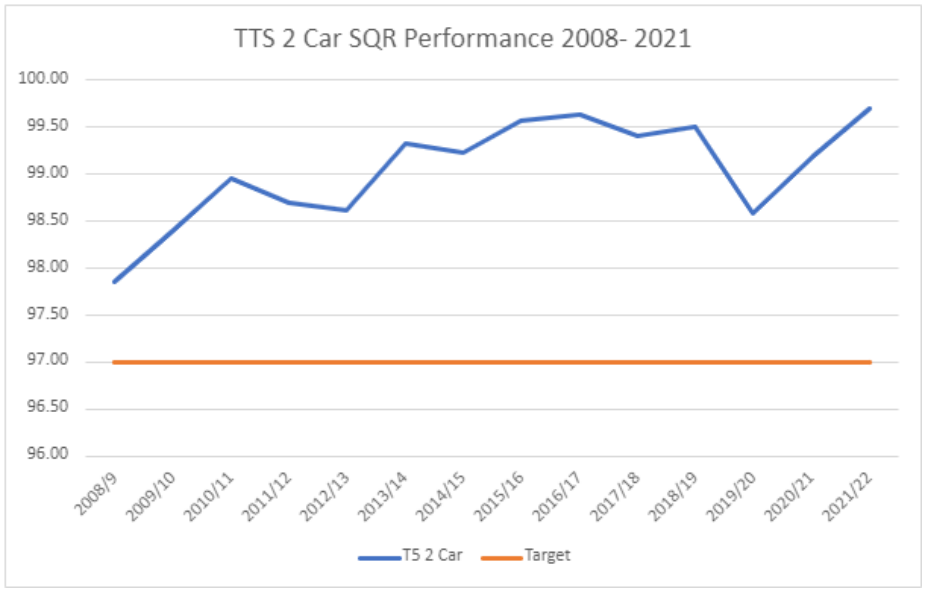
| Evidence Appraisal | Conclusion |
|---|---|
| HAL has stated that they can continue to operate and maintain the lifts, escalators and travelators under the Safety Only Plan but there will be an increased risk of more frequent outages and the possible risk of longer time out of service. The Safety Only plan would also not allow them to carry out dead-banding activities such as fire cleans. | • HAL says it will not be able to maintain the assets to the level they would wish without some additional operating expenditure. Consequently, there is an increased risk of the service being disrupted due to more frequent failures and potentially greater downtime per frequency.<br><br>• On lifts for example, there will be certain assets that are more heavily used owing to proximity to entrances and exits, leaving some assets less used. Whilst the age of the asset is not an absolute guide to an assets health, HAL proactively manages the assets in order to ensure their safe and efficient operation. Components from more lower traffic areas can be changed into high traffic assets. The harvesting of reusable components from assets is standard practice to create a stock of spares. The downtime during the pandemic has reduced wear and tear which may have added a few months life but not 1.5 years as might be assumed.<br><br>• When HAL's lifts are compared to a comparator such as TfL, HAL acknowledge that their own lifts are less industrial than those used by TfL but that they endure very high throughput with trolleys and heavy wheeled suitcases, that cause the level of maintenance that is regularly required to ensure they can operate safely.<br><br>• No detailed modelling or data has been shared that definitively proves the impact of the ESO but given the criticality of the assets and the age profile, the degradation of 2%pts is considered reasonable for the Safety Only Plan excluding any ESO spending in H7.<br><br>• The requirement for additional opex via a mechanism such as the ESO is deemed reasonable for this asset class to improve the reliability of the assets in question. It should be noted that the CAA has made an allowance for the ESO in its H7 Initial Proposals which could therefore mitigate the risk of asset failure and make the optimal/Q6 target achievable. |

# OBR Target Assessment | Terminal 5 TTS

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Predictable & Reliable | Availability 1 Train | 99% | 97% |
| | Availability 2 Train | 97% | 95% |

- All assets clearly age and the Track Transit System (TTS) will, during H7 reach its mid life point. Because of this occurrence, there will be several elements of the system that will require replacement in order to maintain the appropriate levels of service. Important to note, is that these elements are not included as capex in either of the proposed plans, as HAL states they do not have a risk rating as a minimum of "medium".
- In the Optimal Plan HAL account for an Enhanced Service Overlay that as stated, can mitigate the residual risk of failure and maintain the Q6 target as a consequence. The Safety Only Plan does not include this overlay and as a result HAL has reduced the targets.
- The charts to the right show that since 2008 on an annual score basis, HAL has exceeded the SQRB target every year for both 1 and 2 train availability, though it fell below the 2-train availability target for 1 month during this period.
- Given the strong historic annual performance score, there is a case for considering these measures for further stretch in H7, albeit there is less scope for the 1 Train measure as this target is already at 99%.



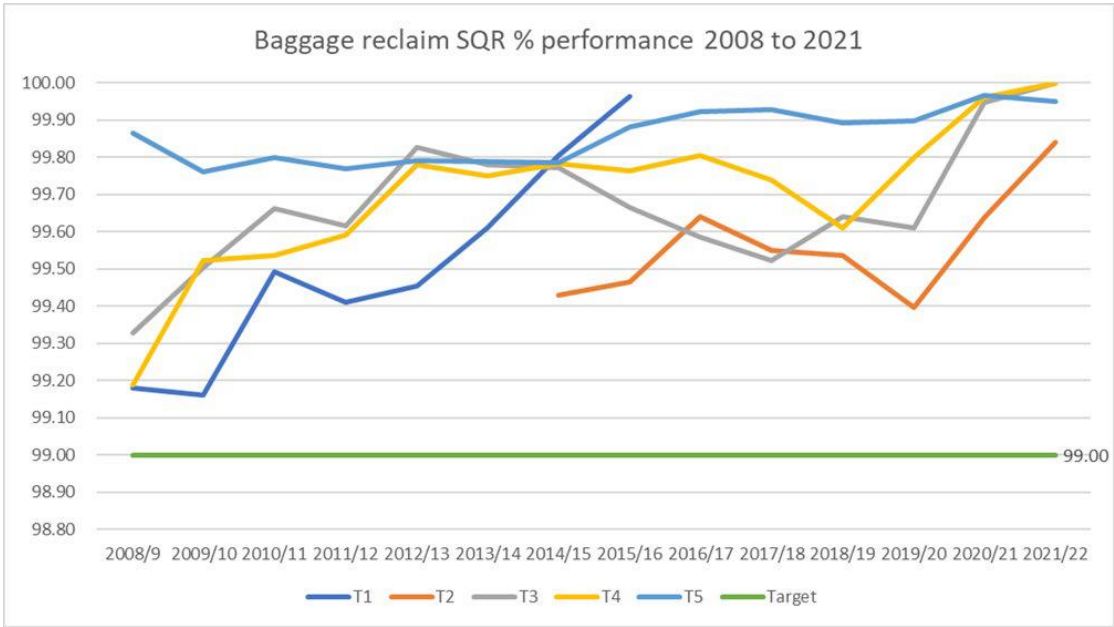

Source: HAL data, Arcadis analysis

# OBR Target Assessment | TTS

| Evidence Appraisal | Conclusion |
|---|---|
| HAL has stated that they can continue to operate and maintain the TTS under the safety only plan but there will be an increased risk of more frequent outages and possible risk of longer time out of service. The safety only plan would also not allow them to carry out dead-banding activities. | Without the Enhanced Service Overlay (ESO), HAL says it will not be able to maintain the TTS to the level they would want, Consequently, HAL considers there is an increased risk of the service being disrupted due to more frequent failures and potentially greater downtime per frequency. HAL would be able to use the ESO to further improve the maintenance regime and leverage economies of scale when accessing the equipment such as Tunnel Ventilation Control System (TCVS) fans which need attention. The TCVS as an example has multiple fans which need attention. In order to access the fans the service needs to be switched off. This can take around 4 hours for each maintenance window. As the CAA has made an allowance for an ESO in its Initial Proposals in October 2021, the risk HAL states under the Safety Only plan is considered as being mitigated. |
| HAL has stated that the asset requires more intensive maintenance given it has gone beyond its 10 year asset window. | It is recommended by the manufacturers that the maintenance regime is ~~be~~ enhanced as once the asset goes beyond 10 years the bearings as an example will need replacing in all TCVS fans. All fans are showing signs of vibration. Fan 3 is at high risk.<br><br>HAL has not provided any detailed modelling but has provided annual occasions and minutes downtime over the last 10 years which shows the level of disruption. In 2020 the service was down for most of the time but this is clearly explained by HAL's own energy saving initiative and the impact of the global pandemic. An ESO as a concept is considered reasonable to maintain the reliability of the assets in question and importantly should be noted that the CAA has made an allowance for the ESO in its H7 Initial Proposals which could therefore mitigate the risk of asset failure and make the Optimal Plan/Q6 target achievable. |

# OBR Target Assessment | Baggage System Reclaim Availability – Arrivals Carousel

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Comfortable and secure | Baggage System Reclaim Availability – Arrivals Carousel | 99% | 98% |




Source: HAL data, Arcadis analysis

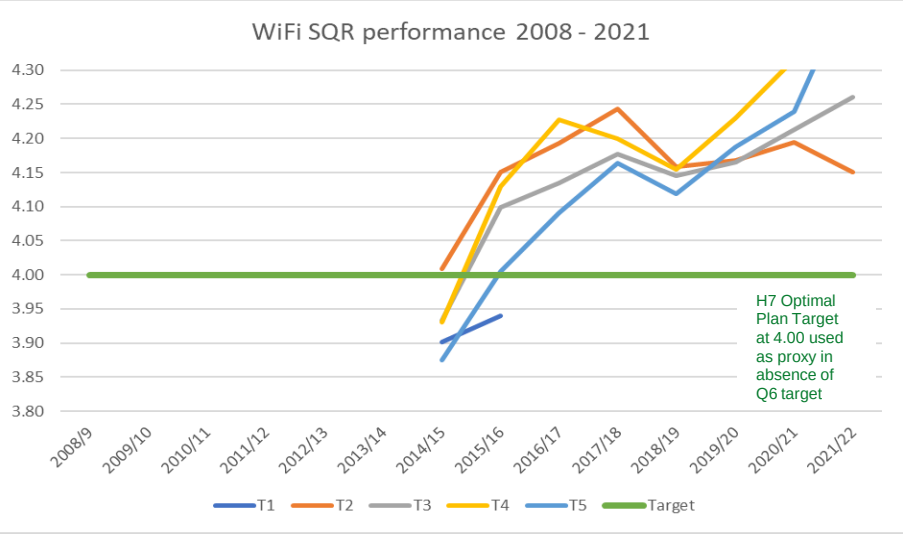
- The Optimal Plan target for baggage reclaim SQRB performance is 99% compared to the Safety Only Plan of 98%.
- The historical data for 2008-2021 clearly indicates that across all terminals, the airport has been performing above the baggage reclaim target of 99%.
- HAL is not proposing any expenditure for replacement of its baggage reclaim assets. However, they have requested additional opex through the Enhanced Service Overlay to mitigate the risk of asset failure.
- Without the overlay in the Safety Only Plan, HAL forecasts a drop in service levels across both baggage reclaim availability for H7. The rationale for this is around the age of the assets. By start of H7, the majority of baggage carousels in T3 and T4 will be over 25 years old and at the end of their asset life. T5 carousels will be 18 years old by the end of H7. With greater age, there is increased risk associated with outages or failures of the equipment.
- The Optimal Plan mitigates against the risk of equipment outages with the Enhanced Service Overlay, which allows for increased maintenance / inspection regimes. Without the overlay in the Safety Only Plan, HAL says that it will not be able to achieve this maintenance frequency, which will increase the risk of asset failure occurring. It should be noted that the CAA has made an allowance for the ESO in its H7 Initial Proposals which could mitigate the risk of asset failure.

# OBR Target Assessment | Baggage System Reclaim Availability – Arrivals Carousel

| Evidence Appraisal | Conclusion |
|---|---|
| HAL says that across the Heathrow campus, the baggage reclaim infrastructure is either approaching or exceeding its expected life, which increases the risk of asset failure. | The rationale of ageing baggage reclaim assets can be justified in T3 and T4, which are the oldest terminal buildings. We do not think that the same rationale could be applied to T2 and T5 as these facilities have been opened within the last 10-15 years, and we would expect that there has been ongoing maintenance / inspection regimes of the baggage reclaim assets to date. |
| HAL says that the reclaim assets in T3 that are proposed for replacement are more than 50 years old – reclaim units 3 and 8. These have the lowest baggage throughput in T3 but the highest rate of maintenance resource utilisation. | Whilst we would accept that the original footprint of the unit is 50 years old, we would conclude that the systems and relevant components are **not as old** as HAL is suggesting. The reason being, that components within the reclaim units have been replaced over time with new parts.<br><br>According to HAL, **80%** of components in the reclaim units are non-original. The percentage of replaced components suggests that the reclaim assets are in reasonably good condition. The last major overhauls took place in 2012 and 2013 for reclaim units 3 and 8.<br><br>We think that the degradation suggested by HAL is less likely because of the reclaim assets and components having been refurbished or replaced over time. This suggests that the increased frequency of maintenance / inspection regimes that HAL has said would be required, may not be necessary across the whole campus. |
| HAL says that unavailability of baggage reclaim assets due to unserviceability will have a detrimental impact on passenger service. | We asked HAL about its contingency process if reclaim units are unavailable. Standard practice is that only a single flight is allocated to a reclaim unit. Two flights could be squeezed on to a single reclaim with resilience resource deployed to offload and pen bags using available floor space. Reclaim units 3 and 8 are deemed to be fragile and cannot be used to double stack bags due to the risk of breakages. According to HAL, this reduces reclaim capacity by 50% and lowers the ability to use units 3 and 8 for contingency if other belts are taken out of service.<br><br>This potentially explains the reduction in target between the Safety Only and Optimal plan of 1%. Without some additional opex via the resilience component of the Enhanced Service Overlay, there is the expectation they will not be able to maintain the ageing assets as thoroughly, which increases the risk of equipment becoming unserviceable more frequently. It should be noted that the CAA has made an allowance for the ESO in its H7 Initial Proposals which could therefore mitigate the risk of asset failure and make the optimal/Q6 target achievable.<br>The contingency process potentially provides some resilience although it is not ideal from an operational or passenger experience perspective. |

# OBR Target Assessment | Wi-Fi performance

| Consumer Outcome | Measure | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Enjoyable experience | Wi-Fi Performance | 4.00 | 3.93 |




Source: HAL data, Arcadis analysis

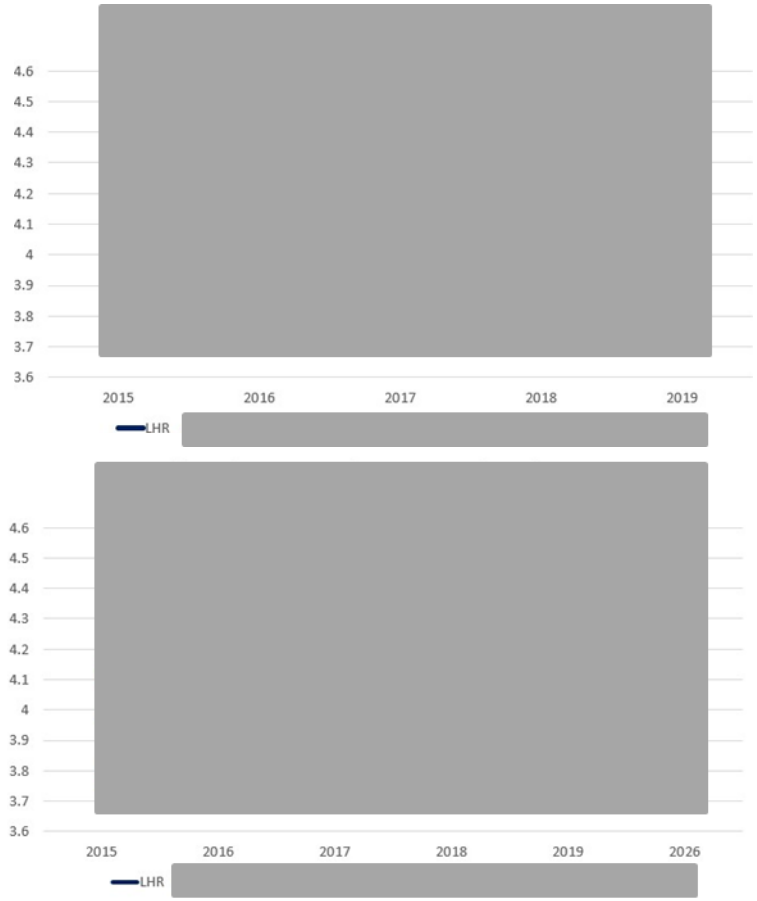
- Consumer expectations of Wi-Fi performance at airports are shaped and informed by passengers own experiences of Wi-Fi that they experience in their day to day lives outside of the airport environment. HAL has upgraded their Wi-Fi performance twice in the last decade to keep pace with consumer expectations.
- HAL saw satisfaction levels with the service decline by 0.07 prior to any upgrades being deployed and then subsequently recover once the new service was introduced.
- In the Optimal Plan HAL plans to upgrade their Wi-Fi service (captured under “Commercial Revenue Generation” programme). This upgrade HAL believes, will enable them to achieve their Q6 target
- Under the Safety Only Plan HAL would have their existing Wi-Fi capability until at least 2027, which they say will leave them “lagging behind consumer expectations”. HAL therefore forecast a drop in satisfaction below Q6 levels.
- Current performance suggests a QSM score of circa 4.20-4.25 in the period 2020/21 and rising in 2021/22 except for T2 which has seen a 0.05 reduction.
- Currently this metric is for reporting purposes only and does not have an SQRB target or attract financial incentives. For H7 Arcadis has been advised that this will become a measure with a target and financial incentive.

# OBR Target Assessment | Wi-Fi Performance

| Evidence Appraisal | Conclusion |
|---|---|
| • In the Safety Only Plan HAL will have existing Wi-Fi capability until at least 2027, which they say will leave them lagging behind consumer expectations. HAL therefore forecast a drop in satisfaction below Q6 levels. | • The SQRB score for Wi-Fi has been above the optimal plan target (4.0) every year since 2015/16. It is recognised that passengers regard Wi-Fi as somewhat of a hygiene factor and just expect it to be available, reliable and of an appropriate speed.<br><br>• Under the Safety Only Plan HAL is proposing a drop of c0.25 based on 2020/21 levels. This seems at odds with HAL's own metric of a c0.07 drop in SQRB score prior to any upgrades the airport had previously introduced.<br><br>• The degradation of 0.07 between the plans could be explained by the inability to upgrade the infrastructure but as stated above this should be reflected from the current performance level and not downgrading from the Q6 average of c4.09. Current performance as at August 2021 is c4.20-4.30 across the operational terminals, with existing infrastructure, but recognising lower passenger volumes may help to provide improved connections and bandwidth which could be reflected in these higher scores.<br><br>• The degradations HAL suggests do not therefore appear to take into account the current level of service offered and suggests the levels proposed by HAL under either plan could be seen as a worst case scenario.<br><br>• Please see slide 45 which discusses options for potential stretch beyond the optimal plan target. |

# OBR Target Assessment | Overall Satisfaction

| Measure | 2019 performance | Optimal Plan | Safety Only Plan |
|---|---|---|---|
| Overall Satisfaction | 4.24 | 4.26 | 4.17 |



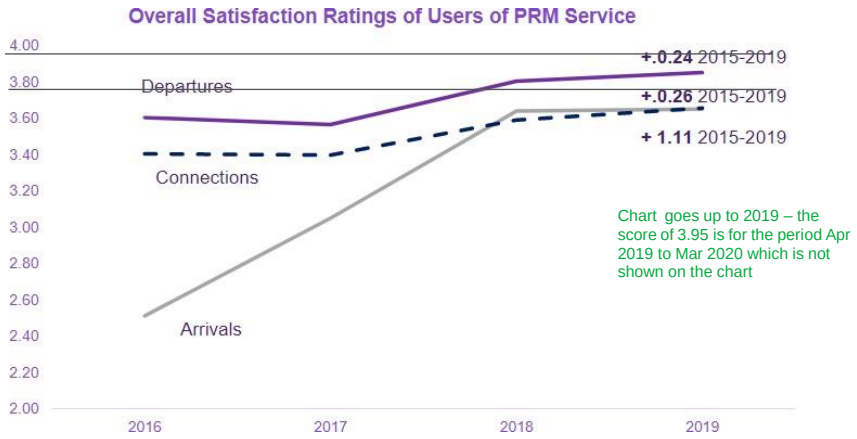

- The Optimal Plan Target in H7 is 4.26. In comparison the Safety Only Plan is lower at 4.17.
- Historic SQRB performance data is not available for overall satisfaction as this is a new proposed reputational OBR measure. However, HAL's 2019 performance is set at 4.24.
- We also note that HAL's QSM performance data in recent months is as follows:
  - June 2021 - overall departures satisfaction was 4.42 and for arrivals was 4.33
  - May 2021 -overall departures satisfaction was 4.39 and for arrivals was 4.42
  - April 2021 - overall departures satisfaction was 4.44 and for arrivals was 4.22
  - March 2021 - overall departures satisfaction was 4.27 and for arrivals was 4.10
- HAL's most recent performance on overall satisfaction would indicate that HAL is exceeding the optimal plan target in 3 of the 4 months shown above, with only March being below 2019 performance level. This further emphasises the point that historic and current/recent performance is not being taken into account sufficiently when HAL has set its proposed target, albeit set against lower passenger volumes due to the pandemic potentially leading to inflated scores in the period 2020/21.

# OBR Target Assessment | Overall Satisfaction

| Evidence Appraisal | Conclusion |
|---|---|
| Key areas that drive overall satisfaction will see either improvements or deterioration in H7 depending on which plan is delivered. In its Updated Business Plan, HAL states that the cumulative impact of reduced targets in its safety only plan for measures including security, wayfinding, cleanliness, Wi-Fi, baggage reclaim (availability) and T5 TTS will lead to a reduce target of 4.17 | Overall satisfaction is a culmination of consumer satisfaction in other areas. The degradation from 4.24 to 4.17 is caused by different measures having lower targets in the Safety Only Plan compared to the Optimal Plan. Each measure is covered off individually but overall, the degradation is not supported based on the evidence seen.<br><br>To provide more detail, if one considers the degradation seen under Security areas as an example for the Safety Only Plan, this is not supported by the analysis seen to date. As such any knock on effect this has on Overall Satisfaction must therefore also be challenged and deemed unreasonable. When other areas such as Cleanliness and Wayfinding are then also factored in, it becomes clear that the Safety Only Plan target at 4.17 is not reasonable on the basis of the CAA's Initial Proposals where opex allowances are included, thus mitigating some of the risks identified by HAL. |
| Over H7 an Optimal Plan will, relative to a Safety Only Plan, mean:<br><br>• 4.9 million more passengers will experience a Very Good or Excellent journey (ASQ score 4 & 5)<br><br>• 2 million fewer passengers will experience a Poor or Fair journey (ASQ scores 1 & 2) | Based on the historical data which shows that HAL is achieving between 4.1 and 4.2 for Overall Satisfaction,(this is the ASQ score which is on a different scale to the QSM score that will be used for OBR), it is reasonable to assume that the Optimal Plan in H7 could lead to this projected number of passengers experiencing a Very Good or Excellent journey.<br><br>It is advisable that HAL provides more evidence to support this statement. |

# OBR Target Assessment | PRS / PRM

| Customer Satisfaction | 2019 Performance | Optimal Target | Safety Only Target |
|---|---|---|---|
| Cared for and supported | 3.95*<br><br>*April 2019 – March 2020) | 4.00 | 3.92 |




Source: HAL data

- The Optimal Target is 4.00 compared to a Safety Only Target of 3.92. HAL's 2019 performance was 3.95 between April 2019 – March 2020. Under the Optimal Plan, the indication is that PRS / PRM satisfaction would increase, whilst under the Safety Only Plan, satisfaction would decrease. The Safety Only Plan target is 0.03 less than its 2019-2020 performance. The Safety Only Plan allows for business as usual for PRS / PRM services to be provided. Therefore, it is difficult to reconcile why HAL's position is that there would be a degradation in service / satisfaction.

- The most recent PRS / PRM performance indicates that HAL's performance is well above target;
  - June 2021 – Total (4.78); Departures (4.76); Arrivals (4.80); Connections (4.83); Staff Satisfaction (4.78)
  - August 2021 – Total (4.62); Departures (4.58); Arrivals (4.70); Connections (4.59); Staff Satisfaction (4.62)

- It would be reasonable to assume that HAL has not sufficiently considered the historical and current performance in setting their targets for H7. Based on the recent performance (see above), it is not clear why HAL would set a lower target of 4.00. Furthermore, we would also question why the 2019-2020 performance of 3.95 cannot be achieved in H7 without the Enhanced Service Overlay (Safety Only Target of 3.92).

- Notwithstanding reduced passenger volumes over the last 18 months, it would be rational to conclude that the service providers operation would be scaled back to reflect demand so current performance is not through over resourcing but perhaps reflective of a less congested airport environment, but still the recent scores shown above are significantly higher than those proposed under either HAL plan.

# OBR Target Assessment | PRS / PRM

| Evidence Appraisal | Conclusion |
|---|---|
| The position from HAL is that the Optimal Plan would provide the necessary enhanced service overlay to improve PRM service offering. The overlay would provide for retail engagement tools and a personal digital system (buzzer system), estimated at £2.5m for rollout. | HAL has stated that the proposed personal digital system are not considered to be safety critical and therefore would not be delivered without the Optimal Plan. Such a system offers the means to provide PRM / PRS passengers with dignity and care and therefore we would challenge why HAL considers this could not be delivered in the Safety Only Plan. To date, HAL has not provided substantial evidence as to why the £2.5m to deliver this system could not be made available in the Safety Only Plan budget |
| HAL has said that a Safety Only Plan will result in the gains made in the last few years being eroded. | HAL's position is that in a Safety Only Plan, PRM / PRS will be more adversely affected at multiple points in their Heathrow journey compared to non assistance users. The assumption is that other points within the journey such as check-in, security, connections, will offer a less satisfactory service under a Safety Only Plan. Whilst this is reasonable, we observe that HAL has not been able to model the impact of this on PRM / PRS. The graph on slide 38 shows that overall satisfaction for users of the PRM service increased between 2015-2019. Without the modelling, so it is not clear as to why HAL suggest gains will be eroded. |
| HAL has told us that decreasing satisfaction has been driven by a decrease in personal space for PRM / PRS users. | Reduced passenger numbers following Covid-19 suggests that the terminal facilities will have less operating constraints during H7. HAL has said that they do not expect PRM space to be constrained until passenger numbers return to approximately 70 million, which is not likely to occur until at least 2025 based on current forecasts. It is more likely that with increased space, satisfaction rates will remain constant, or not decrease. |
| HAL has told us that PRS / PRM service decline based on an increased need for personal space. | From our engagement with HAL, we understand that PRS who use assistance services account for a very small percentage of all passengers. If passenger traffic is expected to be lower in H7, this would imply that the number of PRS will also be lower placing less demand on the services. If there is less demand for the provision of PRS / PRM services over the course of H7, would the service levels actually decline and does this mean that performance standards could be maintained? If so, then this raises the question of why the Optimal Plan target cannot be delivered, especially when considering the current / historical performance. |

# Airline Feedback

- A feedback session was convened with the airline community on 20th September 2021 to seek their views on HAL's proposed OBR targets. The session was attended by British Airways, Virgin, Star Alliance and the AOC.
- Airlines have concerns over the lack of data and modelling that has been shared to date that substantiates either of the business plans HAL has proposed. This has caused delays in being able to progress the H7 plans.
- On security specifically but not exclusively, the airlines need far more information on what each of the capital spend categories actually represent especially when viewed against HAL's own pilot lanes (costing £2m/lane) and market benchmark information suggesting lower investment would be required for the scanners and x-rays. Once this information is available, then more constructive dialogue can take place.
- Airline engagement appeared to endorse the benchmarking position Arcadis has concluded on the Security programme whereby the £420m in the Safety Only Plan, would be more than sufficient to procure and commission all 163 lanes at the airport in order to make them compliant with sufficient spend to also make a contribution in part or in full to the compliance and transformation programmes as/if required. The airlines note that they are unclear as to why the level of spend is so high across the security program as HAL has provided very few details.
- The airlines also noted their September 2021 Capital Plan submission which set out their views on the costs per security lane. Accordingly, the airlines' current view is that £244m is sufficient spend to replace all 163 security lanes and that they have not had seen information from HAL to understand why the total should be any higher than that. The airlines noted if there are requirements for further spend, they would assess those requirements when presented.
- It is understood from liaising with airlines representatives subsequently, that a site visit took place at the airport with the security equipment manufacturers, HAL staff and airline representatives. The purpose of the visit was conveyed as being to better understand the challenges/opportunities to accommodate the new technology into the search areas. This collaboration is welcomed and encouraged but no substantive conclusions can be drawn from it at this stage and it should be noted that Arcadis was not present at the session.
- The airlines continue to work with HAL to formulate a way forward and continue to seek greater insight.

# Target stretch analysis

## Areas for further consideration

**(Q6 scores drawn from HAL QSM data – score is annual average from available data over the Q6 time frame*)**

- **The following slides seek to build upon the earlier analysis and demonstrate where HAL may reasonably exceed their suggested targets and so be in scope for further stretch**

*Some terminal specific data is missing for certain years, results are still considered reflective of overall performance

# Summary of proposed OBR targets v actual performance

| Measure | Q6 Target | Optimal Plan | Safety Only Plan | Q6 Score | Comments/Observations |
|---|---|---|---|---|---|
| Provision of stand facilities*<br><br>Provision of stand facilities combines four SQRB measures – SEGS, PCA, FEGP and APBB (Jetties) | 99%<br><br>(Pre Conditioned Air 98%) | 99% | 97.25% | 99.98% | As the CAA has proposed an Enhanced Service Overlay (ESO) in its Initial Proposals, the Optimal Plan Target is considered reasonable. There is little scope to provide further stretch as the target is already at 99%. |
| Stand availability | 99% | 99% | 98% | 99.81% | Owing to the ESO allowance by the CAA in its Initial Proposals, the Safety Only Plan target is not appropriate. The target for both plans should as a result be 99% in line with the Optimal Plan proposed by HAL and Q6 and deemed reasonable requiring no further change. |
| Wayfinding | 4.10 | 4.15 | 4.10 | 4.24 | It is important to note that the methodology for the Wayfinding targets in both plans is linked to the following statistical approach. HAL have taken the lowest monthly score by terminal for 2012-18 and the lowest score by terminal in 2019. From these two periods the higher figure (4.22 T5 September 2019) is taken and adjusted downwards for a margin of error of some 0.062, resulting in the 4.15 under the Optimal Plan. This approach feels unduly negative and neither represents a true reflection of actual performance across all terminals over those two time periods in question nor does it reflect current performance since 2019. It is also worth noting that overall performance has been on an upward trajectory since 2015/16. This is also evident from the SQRB bonuses HAL has achieved for Wayfinding as stated in its regulatory published accounts. The current performance at c4.27 and the annual average over Q6 at 4.24 are regarded as better guides to how the target could be set. HAL considers current performance will degrade over time and against its peer airport group, without the additional investment under the Optimal Plan. However, with passenger numbers not expected to reach 2019 levels until c2026, it is reasonable for the score to sit in the range of 4.20-4.25 for H7, as reduced passenger numbers increase line of sight and visibility of signage and way markers due to less congestion in and around the terminals. There is potential to review the target in mid H7 based on performance. |

# Summary of proposed OBR targets v actual performance

| Measure | Q6 Target | Optimal Plan | Safety Only Plan | Q6 Score | Comments/Observations |
|---|---|---|---|---|---|
| Central search queue time % queue times < 5 mins | 95.00% | 95.00% | 33%-75% | 96.99% | Given the evidence shared by HAL to date, it is believed that HAL could procure sufficient lane equipment to have all lanes compliant. What is less clear is by what date this could be achieved given the 1.5-year lead time on the project as advised by HAL. The range suggested by HAL under the Safety Only Plan appears to have little or no substantive evidence to robustly support it. More data is required but without more information it is hard to see anything other than the current Q6 and Optimal Plan targets as being appropriate. Current and historic performance is strong and consistently above target on average, notwithstanding T2 falling below target in 2020/21 based on QSM data seen for <5 mins queue time. There is little room for further stretch for the 10-minute queue time given it is already at 99%. The Optimal Plan targets for both measures are therefore considered appropriate. |
| % queue times < 10 mins | 99.00% | 99.00% | 46%-89% | 99.84% | |
| Transfer search queue time % queue times < 10 mins | 95.00% | 95.00% | 46%-89% | 98.09% | Opportunity to continue to achieve 96-97% given strong historic performance. Again, consideration must be given in the early part of H7 to the disruption from the security compliance transformation programme, notwithstanding T3 and T5 being very close to and on occasion, slightly below target in the period 2012-2015. The prudent view may be to defer any possible stretch for this measure owing to the disruption from the security compliance programme. |
| Staff search queue time % queue times < 10 mins | 95.00% | 95.00% | 46%-89% | 98.79% | Opportunity to maintain 96-97% given strong historic performance, notwithstanding T5 performing c3.0%pts lower than the other terminals during the period 2013/14 to 2019/20. Again, consideration must be given in the early part of H7 to the disruption from the security compliance transformation programme. There is potential to use staff search as a test case for any target stretch. The prudent view may be to defer any possible stretch for this measure owing to the disruption from the security compliance programme. |
| Control post vehicle Queue Time % vehicle queue times < 15 mins | 95.00% | 95.00% | 46%-89% | 96.29% | In line with Central search <5 mins rationale, control posts have performed well historically so there is potential to uplift metric to 95%-96% or consider reducing the time band from 15 minutes downwards. Will be an impact from the transformation programme which again must be factored into any stretch proposal considerations. We understand there are ongoing stakeholder discussions relating to control posts but as with other areas, the prudent view may be to defer any possible stretch for this measure owing to the disruption from the security compliance programme. |

# Summary of proposed OBR targets v actual performance

| Measure | Q6 Target | Optimal Plan | Safety Only Plan | Q6 Score | Comments/Observations |
|---|---|---|---|---|---|
| Availability of lifts, escalators, travellators (renamed from PSE) | 99% | 99% | 97% | 99.64 | As the CAA is allowing an Enhanced Service Overlay (ESO), the Safety Only Plan target is no longer applicable. As such the target for both plans should be 99%. The CAA has recognised the criticality of the assets and the need for enhanced maintenance which should therefore enable HAL to achieve 99% as per their rationale for the Optimal Plan target. 99% deemed appropriate – no change required from Q6 target or Optimal Plan for H7 as target is already 99% and therefore there is little scope for further stretch. |
| TTS Availability 1 train<br>TTS Availability 2 train | 99%<br>97% | 99%<br>97% | 97%<br>95% | 99.96<br>99.47 | 1 Train Q6 Targets and therefore the Optimal Plan for H7 are deemed appropriate owing to the fact the CAA has granted a quantum of the ESO requested by HAL under the Optimal Plan and there is also little scope for stretch beyond 99%. 2 Train targets could reasonably be increased to a range from 97.00% to 99.00% based on the ESO being allowed in part and historic annual performance being in excess of target on an annual average basis in Q6 and on that same basis, above 98.50% every year since 2010. The CAA ESO proposed allowance mitigates the degradation in the target percentage seen under the Safety Only Plan for the 2-train availability target. |
| Cleanliness | 4.00 | 4.05 | 4.00 | 4.25 | With the Covid overlay the CAA has allowed in its Initial Proposals there would appear to be scope for uplift based on performance throughout Q6 (which was comfortably above target and improving over time in T3-T5, and notably above target in T2) and lower passenger numbers than 2019 with passenger levels not expected to match 2019 levels until possibly 2026. HAL are currently achieving scores in the region of 4.30+ with a continuous positive trajectory making the 4.05 suggested under the Optimal Plan seem unduly low and a contender for uplift to a range of 4.20-4.30 which aligns with recent performance and is therefore considered achievable and reasonable. |
| Pier served stand usage | 95% | 95% | 94% | 98.80% | As a minimum, the Q6 target should be maintained but historic performance has been consistently strong achieving 97.77% in 2019 and as an average 98.80% during Q6. Given this and the lower passenger numbers in early H7 and the proposed ESO assisting with asset maintenance, there is scope to increase this target to a range from 95.00% to 97.00%, notwithstanding T3 being close to target in 2017-2019 as seen previously. |

# Summary of proposed OBR targets v actual performance

| Measure | Q6 Target | Optimal Plan | Safety Only Plan | Q6 Score | Comments/Observations |
|---|---|---|---|---|---|
| Baggage system reclaim availability | 99% | 99% | 98% | 99.68 | As the CAA is allowing an Enhanced Service Overlay (ESO), the Optimal Plan target is reasonable. As such 99% continues to be achievable. The CAA has recognised the criticality of the assets and the need for enhanced maintenance which should therefore enable HAL to achieve 99% as per their rationale for the Optimal Plan target. 99% deemed appropriate – no change required from Q6 target or Optimal Plan for H7 as the target is already 99% and therefore there is little scope for further stretch. |
| Wi-Fi performance | N/A | 4.00 | 3.93 | 4.09 | There is no financial incentive to date but there is little evidence to substantiate any drop in performance from Q6 actuals, at on average 4.09. With lower passenger numbers in the early part of H7, the availability and speed of Wi-Fi should be less impacted and a drop below the Q6 level would need further substantiation. Given rising customer expectations around Wi-Fi, it is suggested that the Wi-Fi performance could be between c4.00-4.20 with current actual c4.19 suggesting this is reasonable and achievable based on historic degradations (c-0.07) evidenced when upgrades do not occur. The Optimal Plan should therefore be seen as the minimum. |
| Overall satisfaction | 4.24 * | 4.26 | 4.17 | May 2021<br>4.39 Departures<br>4.42 Arrivals | The Optimal Plan target (4.26) when compared to 2019 average performance at 4.24 suggests the Safety Only plan is not justified, particularly considering the CAA has made an allowance for the ESO. The suggested target for H7 is 4.26, acknowledging more information is required around security compliance based on trial data and configuration modelling which would likely have a direct impact on Overall Satisfaction. There might be scope for further stretch beyond the optimal target if performance continues at the current May 2021 level in establishing a longer-term trend, but we also note that performance may have been temporarily increased through the significant reduction in passengers. Currently the Optimal Plan target is considered reasonable but should be reviewed based on any further data surrounding the security transformation plan that is made available. The May 2021 scores shown left are likely to have been positively affected by lower passenger volumes. |
| Departure flight punctuality | 78.4%* | 80.5% | 78.4% | 2019 – 78.4% | The Optimal Plan target should be considered based on recent performance and ESO to enhance stand facilities which will impact in this metric. It is recognised that much falls outside of HALs direct control and this is factored into the rationale for recommending the adoption of the Optimal Plan target. |

* Figures based on 2019 performance

# Summary of proposed OBR targets v actual performance

| Measure | Q6 Target | Optimal Plan | Safety Only Plan | Q6 Score | Comments/Observations |
|---|---|---|---|---|---|
| PRS satisfaction | 3.95 (April 2019 – March 2020)* | 4.00 | 3.92 | April 2019 – Mar 2020 @ 3.95<br><br>August 21 @ 4.62 | The Optimal Plan target at 4.00 is deemed as being achievable but given recent performance in August 2021 at 4.62 and the score of 3.95 April 2019 to March 2020, then the Optimal Plan target should be viewed as this measures baseline. It is recognised that the recent 2021 scores will be affected by lower passenger volumes due to Covid-19 but given the significance of the gap between the August 2021 score and the Optimal Plan Target, it is considered that there is scope for some further stretch. |

* Figures based on 2019/20 data

# Overall conclusion - summary

- The approach from HAL to this piece of work has been collaborative and engaging, but often the level of detail required to substantiate a position taken has been either lacking or not available.

- Where HAL has been able to provide sufficient evidence to support a metric, then this has been acknowledged in our findings for each category.

- There seems to have been an approach from HAL in not sufficiently recognising its historic and current levels of performance when setting targets for either plan in H7. Taking Wayfinding as an example, HAL has exceeded the SQRB target every year, using annual data, including when the target was raised in 2014, indicating a long-term upwards trajectory of improved performance. Even under the Optimal Plan at 4.15, this target is still below the current performance level of c4.20+. So, despite more investment HAL is suggesting performance/satisfaction would drop.

- On Security, there needs to be more transparency and where it is possible HAL should share any modelling and trial data at the earliest opportunity to enable all stakeholders to form views on expected performance and therefore the appropriate metrics to set as OBR targets. With the trials not concluding until June 2022, the data provided to date to support the Safety Only Plan is rather subjective and falls short of providing substantive evidence as to the range proposed by HAL. Benchmarking data would suggest HAL has sufficient funds in the Safety Only Plan to provide compliant lanes across its campus albeit set against a challenging delivery programme.

- Some areas such as Baggage Reclaim, Stand Facilities and TTS where an Enhanced Service Overlay has been requested by HAL under the Optimal Plan, the evidence provided was adequate to form a view that some additional opex via the ESO would be beneficial to overall service levels and reliability of the assets and services in question and is therefore deemed reasonable as a concept. It should be noted that the CAA has made an allowance for opex overlays in their Initial Proposals published in October 2021.

# Overall conclusion – summary (continued)

- Some areas have been identified that would warrant more stretching targets. This view is principally based on strong historic performance, lower passenger volumes anticipated in the early years of H7, and the CAA's Initial Proposals to include some form of Enhanced Service Overlay. HAL has clearly performed well against several SQRB measures in Q6 and as such it would be appropriate to review these measures in particular and set them at a level that is challenging to the operator but also and importantly deemed to be realistic and achievable.

- In conclusion, HAL needs to provide greater visibility of any substantive evidence to demonstrate and justify its current position of service degradation under the Safety Only Plan against current service performance and the Optimal Plan. The current dynamic of operating on a year to year basis since Q6 appears to be constraining development of the services with HAL unable to set a clear strategy for service delivery given the uncertainty surrounding the regulatory settlement for H7. Whilst entirely understandable, this should only serve to encourage HAL to provide as much data and evidence as possible, as soon as possible.